

ELECTRONIC SUPPLEMENTARY INFORMATION

Switching the thermodynamics of MgH₂ nanoparticles through polystyrene stabilisation and oxidation

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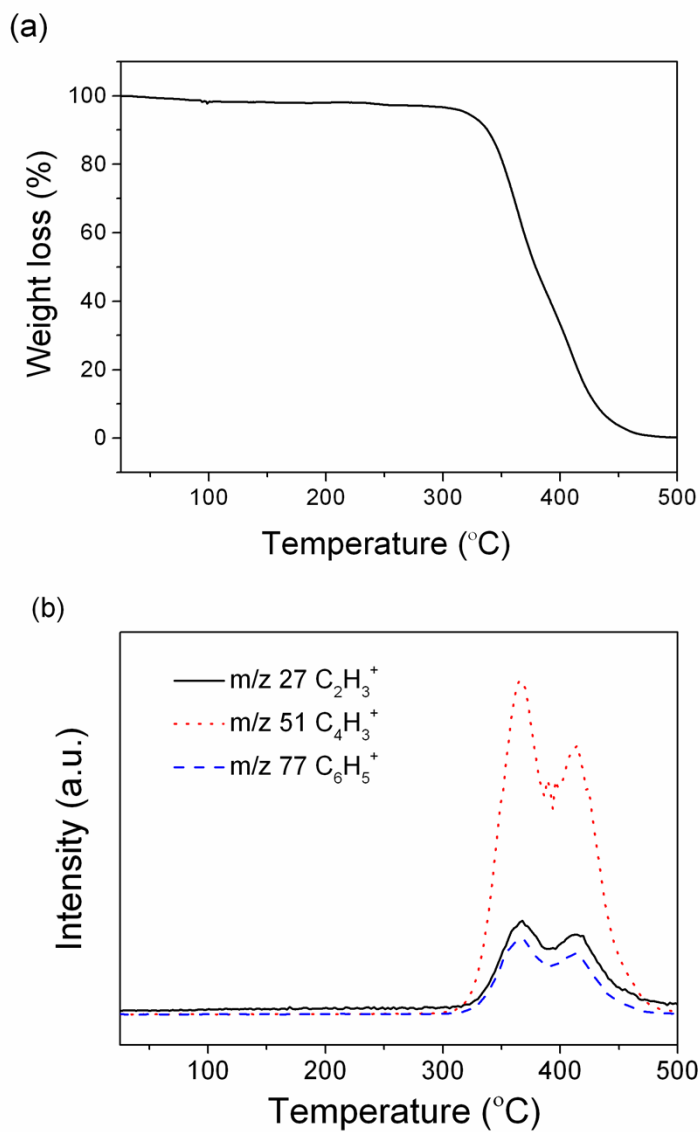
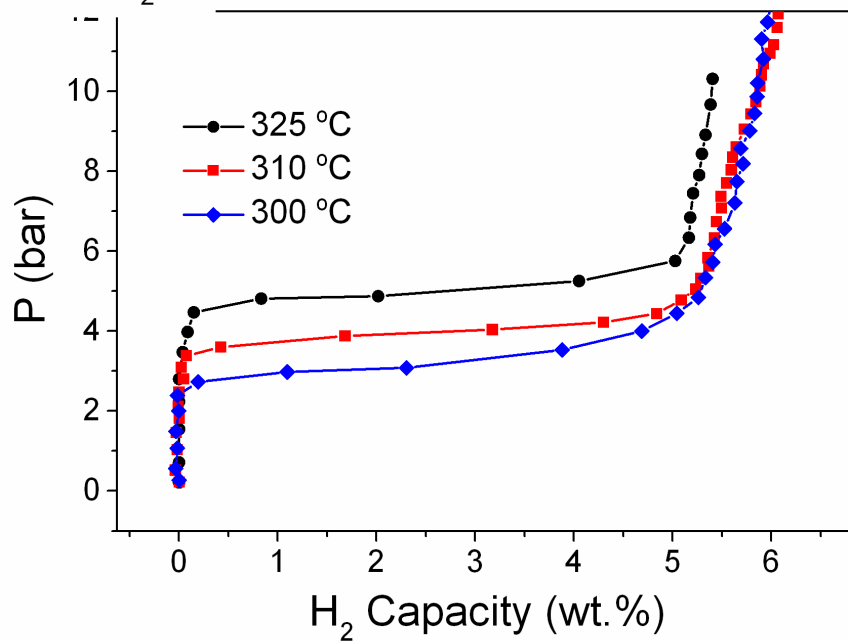


Fig. S1 – (a) TGA profile of PSTN and (b) associated gas evolution as followed by MS for selected m/z. Heating rate $10\text{C}\cdot\text{min}^{-1}$ under an Ar flow of $20\text{ mL}\cdot\text{min}^{-1}$.

Complete decomposition of the polymer occurred between 330 and 450 °C.

(a) MgH₂/C



(b) MgH₂/C oxidised

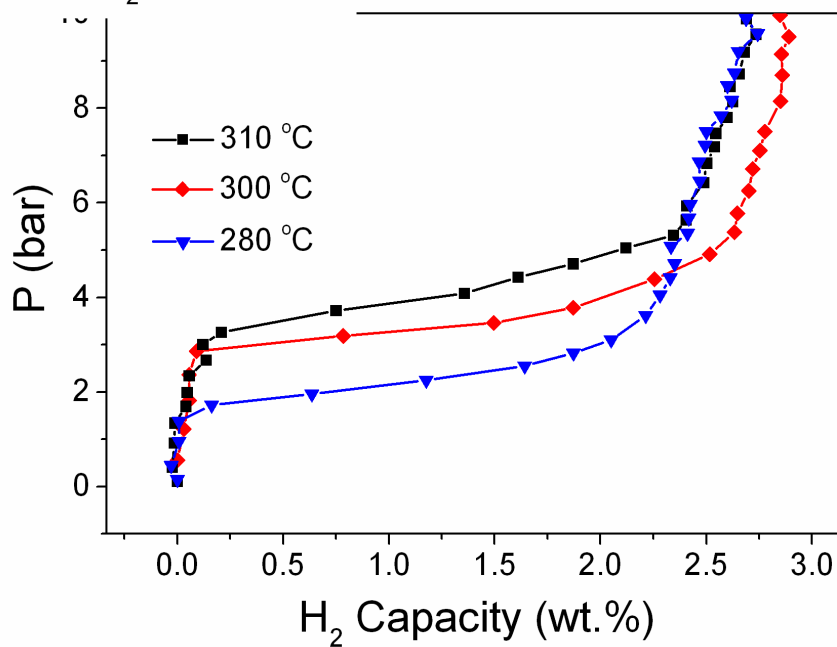
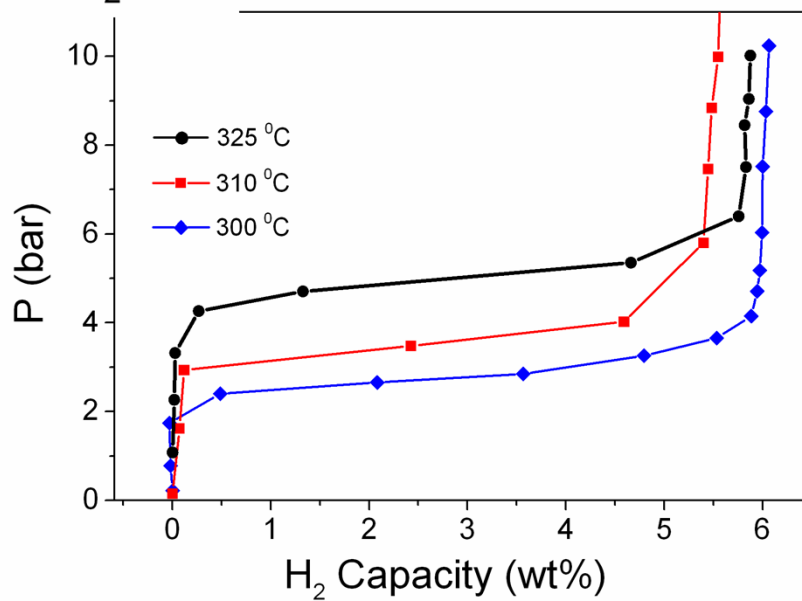


Fig. S2. PCI corresponding to the absorption of hydrogen in MgH₂/C before and after oxidation.

(a) MgH₂/PSTN



(b) MgH₂/PSTN oxidised

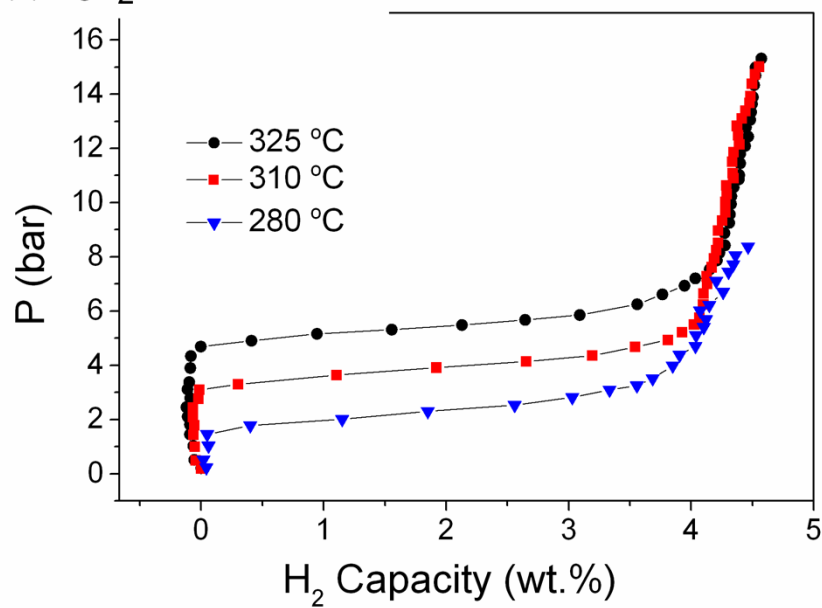


Fig. S3. PCI corresponding to the absorption of hydrogen in MgH₂/PSTN before and after oxidation.

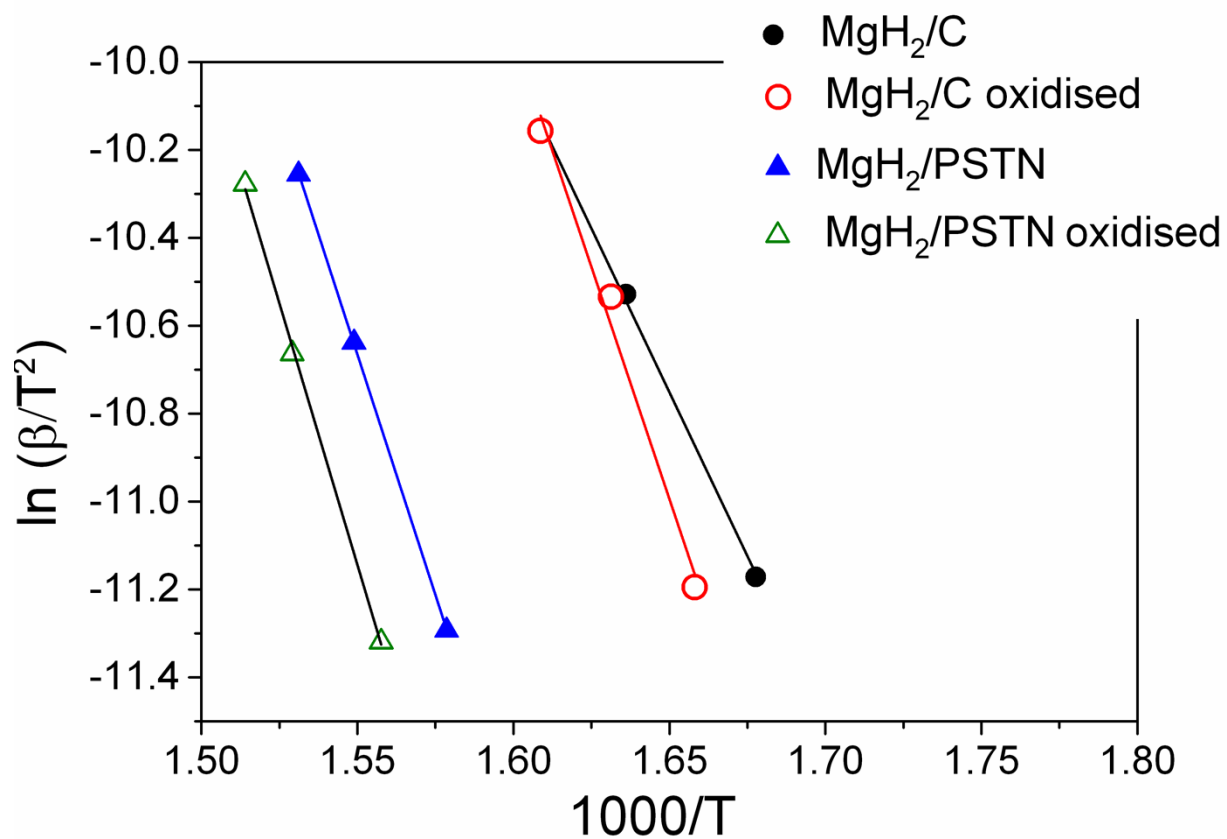


Fig. S4. Kissinger plots for MgH_2/C and MgH_2/PSTN before and after oxidation. These were determined from the hydrogen desorption profiles of the materials after PCI measurements.

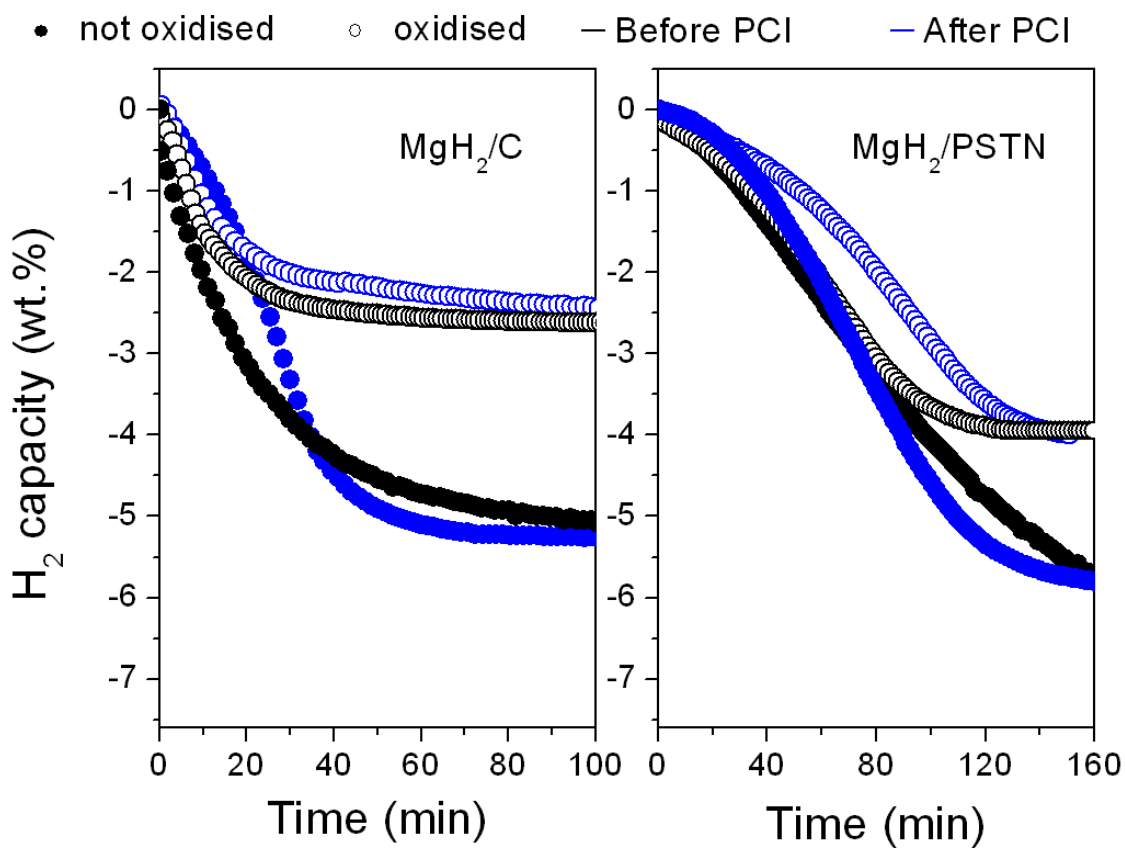


Fig. S5. Hydrogen desorption kinetics measured before and after performing PCI measurements during 1 week for MgH₂/C and MgH₂/PSTN, as synthesised and after oxidation for 24 h in air. The desorption kinetics were measured at 300 °C.

The hydrogen desorption kinetics were found to be stable even after PCI measurements.